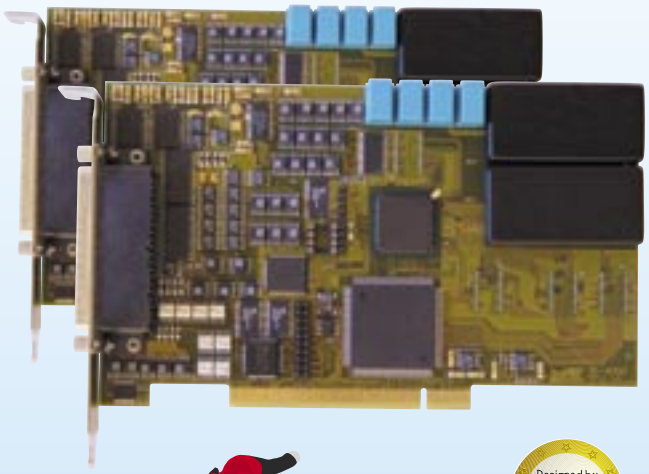
High Quality DAQ Board for Small Budgets

ME-LittleFoXX - The 16 bit Nice Price Starter DAQ Board

Model:
ME-LittleFoXX/
ME-4650

Platform:
- ☑ PCI
- ❑ PXI/cPCI
- ❑ USB
- ❑ Other

Functions:
- ☑ Analog I/O
- ☑ Digital I/O
- ❑ Temp./°C
- ❑ Interfaces
- ❑ Instrument
- ❑ Logger
- ❑ Isolation
- ❑ Accessory
- ❑ Software



ME-LittleFoXX

Designed by MEILHAUS ELECTRONIC

Detailed specifications and expandability see page 9

- Analog inputs:
  - 16 single-ended inputs, programmable ranges ±2.5 V, ±10 V, 0...2.5 V, 0...10 V.
  - **16 bit/500 kHz** A/D conversion.
  - External digital trigger.
- Digital I/O:
  - 32 TTL digital I/O channels (4x 8 bit ports).
  - Each port programmable as input or ouput.
- PCI Local Bus 2.1 compatible. Plug'n'Play. StandardPCI version.

Ordering Codes:

ME-LittleFoXX ME-4650 PCI
PCI A/D board: 16 bit/500 kHz A/D, 16 channels, 4x 8 TTL digital I/O ports

Accessories:

Cable ME AK-D78/1 **1 m**
Cable ME AK-D78 **2 m**
78-pin D-sub male-female (1:1 wired). Connects ME-FoXX and terminal block, ME-MultiSig or user application

Terminal block ME AB-D78M
78-pin D-sub male and spring terminals

Cable ME AK-D78/4000M-F and ME AK-D78/4000M-OE
78-pin, 1:1, D-sub male-female or open ends (OE), with special multiple shielding for ME-FoXX series

Cable ME AK-D25F/S
20-pin IDC connector and 25-pin D-sub female for digital I/O ports C/D. 1x included

Cable ME AK-D2578/4000
25-pin D-sub male-female, connects ME-FoXX with 1x ME-63Xtend

Cable ME AK-D2515/4000
25-pin D-sub male and 2x 15-pin D-sub male, connects ME-FoXX with 2x ME-UB

ME-63Xtend and ME-UB series
External expansion boards/boxes with relays or opto-isolation

ME-MultiSig series
Multiplexing, demultiplexing and signal conditioning system

ME-AA4-3 series
Connectivity adaptor, use to connect exisiting ME-2000i applications to a ME-FoXX series board

Web Link: www.meilhaus.com/e_me

Software:

ME-Power-CD included:
- Drivers for **Windows** XP, 2000, 98/Me, NT. Visual C++, Delphi, Visual Basic and Borland C/C Builder supported.
- Drivers for **Agilent VEE, LabVIEW.**
- Drivers for **Linux** (source code under GPL).
- Drivers for **Python.**
- Utilities, examples, demos.
- "Soft manuals" in English and German for Acrobat Reader/PDF.

Model Overview: ME-FoXX/ME-46xx Family

Ordering Code		16 bit/500 kHz analog inputs					16 bit/500 kHz analog outp.			Digital I/O[5]		16 bit count.	
		Chan.	Isol.	Diff.[1]	ExATrig[2]	S&H[3]	Channels	Isolation	FIFO[4]	Chan.	Isol.	Numb.	Isol.
ME-LittleFoXX	ME-4650	16	-	-	-	-	-	-	-	4x 8	-	-	-
ME-RedFoXX	ME-4660	16	-	-	-	-	2	-	-	4x 8	-	3	-
	ME-4660i	16	√	-	-	-	2	√	-	4x 8	2 ports	3	√
	ME-4660s	16	-	-	-	√ (8)	2	-	-	4x 8	-	3	-
Page 6	ME-4660is	16	√	-	-	√ (8)	2	√	-	4x 8	2 ports	3	√
ME-SlyFoXX	ME-4670	32	-	16	√	-	4	-	-	4x 8	-	3	-
	ME-4670i	32	√	16	√	-	4	√	-	4x 8	2 ports	3	√
	ME-4670s	32	-	16	√	√ (8)	4	-	-	4x 8	-	3	-
Page 7	ME-4670is	32	√	16	√	√ (8)	4	√	-	4x 8	2 ports	3	√
ME-Sylver-FoXX	ME-4680	32	-	16	√	-	4	-	√	4x 8	-	3	-
	ME-4680i	32	√	16	√	-	4	√	√	4x 8	2 ports	3	√
	ME-4680s	32	-	16	√	√ (8)	4	-	√	4x 8	-	3	-
Page 8	ME-4680is	32	√	16	√	√ (8)	4	√	√	4x 8	2 ports	3	√

1) Software-selectable: 32 single-ended (se.) or 16 differential (diff.) inputs.
2) External analog trigger
3) In addition to 1): Sample&Hold for simultaneous sampling on 8 single-ended channels plus 24 conventional single-ended inputs.
4) For extended D/A modes like waveform generation, periodic output of data sets.
5) 2x 8 bit wide ports with or without opto-isolation, depending on model. 2 additional 8 bit wide ports C and D not isolated/TTL. Each TTL port programmable as input/output. Opto-isolated channels: Fixed as 1x 8 bit input and 1x 8 bit output port.

Standard models, short delivery times. All other models: Special custom models on request.

High Quality Allround Multi I/O Board

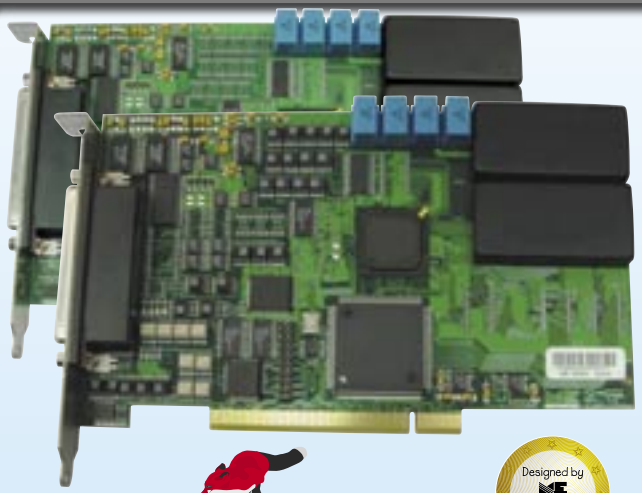
ME-RedFoXX - 16 bit Data Acquisition with or without Opto-Isolation

New.

Model:
ME-RedFoXX/
ME-4660

Platform:
- ☑ PCI
- ❑ PXI/cPCI
- ❑ USB
- ❑ Other

Functions:
- ☑ Analog I/O
- ☑ Digital I/O
- ❑ Temp./°C
- ❑ Interfaces
- ❑ Instrument
- ❑ Logger
- ☑ Isolation
- ❑ Accessory
- ❑ Software



ME-RedFoXX

Designed by MEILHAUS ELECTRONIC

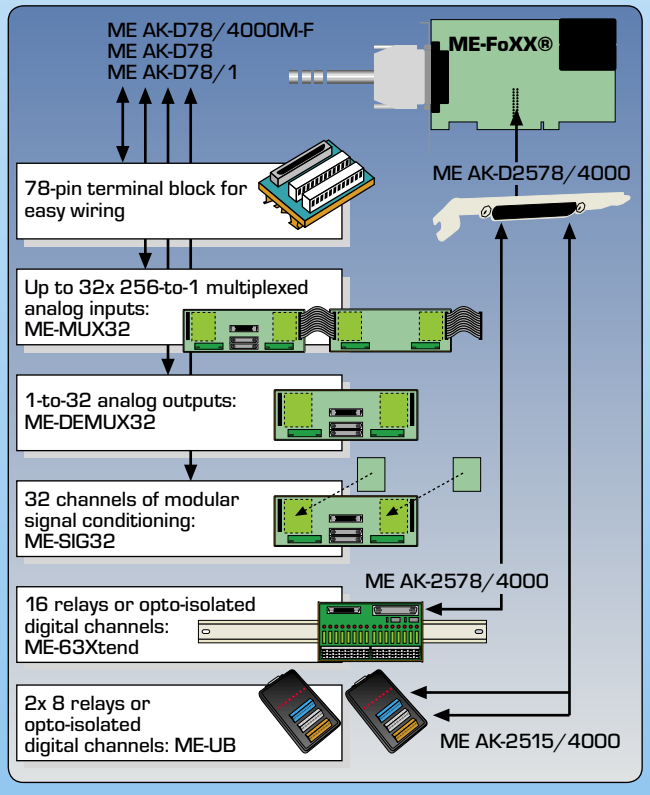
Detailed specifications and expandability see page 9

- Analog inputs:
  - 16 single-ended inputs.
  - **16 bit/500 kHz** A/D conversion.
  - External digital trigger.
  - Models "i" **A/D section opto-isolated**.
- Analog outputs:
  - 2 output channels.
  - **16 bit/500 kHz** D/A conversion.
  - Models "i" **D/A section opto-isolated**.
  - External digital trigger.
- Digital I/O and counters:
  - **32 digital I/O channels**, grouped in 4x 8 bit ports.
  - Models without "i": TTL I/Os.
  - Models "i" **8 opto inputs, 8 opto outputs** and 2x 8 TTL I/Os.
  - 3x 16 bit **counters**. Models without "i" TTL level, models "i" **opto-isolated**. All lines wired to the D-sub connector.
- PCI Local Bus 2.1 compatible. Plug'n'Play. StandardPCI version.

Software:

ME-Power-CD included:

- Drivers for **Windows** XP, 2000, 98/Me, NT. Visual C++, Delphi, Visual Basic and Borland C/C Builder supported.
- Drivers for **Agilent VEE, LabVIEW.**
- Drivers for **Linux** (source code under GPL).
- Drivers for **Python.**
- Utilities, examples, demos.
- "Soft manuals" in English and German for Acrobat Reader/PDF.


ME AK-D78/4000M-F
ME AK-D78
ME AK-D78/1
ME-FoXX®
78-pin terminal block for easy wiring
ME AK-D2578/4000
Up to 32x 256-to-1 multiplexed analog inputs: ME-MUX32
1-to-32 analog outputs: ME-DEMUX32
32 channels of modular signal conditioning: ME-SIG32
ME AK-2578/4000
16 relays or opto-isolated digital channels: ME-63Xtend
2x 8 relays or opto-isolated digital channels: ME-UB
ME AK-2515/4000

Ordering Codes:

ME-RedFoXX ME-4660i PCI
Opto-isol. PCI multi I/O board: 16 bit/500 kHz A/D, 16 single-ended channels; 2 D/A channels 16 bit, 8/8 opto I/O, 2x 8 TTL digital I/O, 3 counters

ME-RedFoXX ME-4660 PCI
see above, but model without opto-isolation

ME-RedFoXX ME-4660s PCI
ME-RedFoXX ME-4660is PCI
Special models on request

Accessories:

Cable ME AK-D78/1 **1 m**
Cable ME AK-D78 **2 m**
78-pin D-sub male-female (1:1 wired). Connects ME-FoXX and terminal block, ME-MultiSig or user application

Terminal block ME AB-D78M
78-pin D-sub male and spring terminals

Cable ME AK-D78/4000M-F **1 m**
Cable ME AK-D78/4000M-OE **1 m**
78-pin, 1:1, D-sub male-female or open ends (OE), with special multiple shielding for ME-FoXX series

Cable ME AK-D25F/S
20-pin IDC connector and 25-pin D-sub female for digital I/O ports C/D. 1x included

Cable ME AK-D2578/4000
25-pin D-sub male and 78-pin D-sub female, connects ME-FoXX with 1x ME-63Xtend

Cable ME AK-D2515/4000
25-pin D-sub male and 2x 15-pin D-sub male, connects ME-FoXX with 2x ME-UB

ME-63Xtend and ME-UB series
External expansion boards/boxes with relays or opto-isolation

ME-MultiSig series
Multiplexing, demultiplexing and signal conditioning system

ME-AA4-3 series
Connectivity adaptor, use to connect exisiting ME-2x00i/ME-3000 applications to ME-FoXX series boards or for opto-isolated connectivity of the "i" versions to a ME-MUX32

Web Link: www.meilhaus.com/e_me

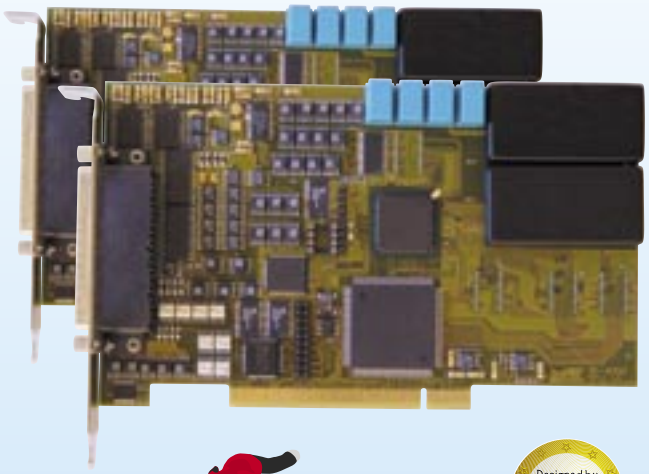
Reliable, Isolated Midrange Multi I/O DAQ Board

ME-SlyFoXX - 16 bit/500 kHz with Complete Opto-Isolation

Model:
ME-SlyFoXX/
ME-4670

Platform:
- ☑ PCI
- ❑ PXI/cPCI
- ❑ USB
- ❑ Other

Functions:
- ☑ Analog I/O
- ☑ Digital I/O
- ❑ Temp./°C
- ❑ Interfaces
- ❑ Instrument
- ❑ Logger
- ☑ Isolation
- ❑ Accessory
- ❑ Software



ME-SlyFoXX

Designed by MEILHAUS ELECTRONIC

Detailed specifications and expandability see page 9

- Analog inputs:
  - 32 single-ended/16 differential inputs.
  - **16 bit/500 kHz** A/D conversion.
  - Models "i" **A/D section opto-isolated**.
  - External analog and digital trigger.
- Analog outputs:
  - 4 output channels.
  - **16 bit/500 kHz** D/A conversion.
  - Models "i" **D/A section opto-isolated**.
  - External digital trigger.
- Digital I/O and counters:
  - **32 digital I/O channels**, grouped in 4x 8 bit ports.
  - Models without "i": TTL I/Os.
  - Models "i" **8 opto inputs, 8 opto outputs** and 2x 8 TTL I/Os.
- 3x 16 bit **counters**. Models without "i" TTL level, models "i" **opto-isolated**. All lines wired to the D-sub connector.
- PCI Local Bus 2.1 compatible. Plug'n'Play. StandardPCI version.

Software:

ME-Power-CD included:

- Drivers for **Windows** XP, 2000, 98/Me, NT. Visual C++, Delphi, Visual Basic and Borland C/C Builder supported.
- Drivers for **Agilent VEE, LabVIEW.**
- Drivers for **Linux** (source code under GPL).
- Drivers for **Python.**
- Utilities, examples, demos.
- "Soft manuals" in English and German for Acrobat Reader/PDF.

Reliable, High Precision, Low Noise DAQ

Meilhaus Electronic is an ISO9001 certified company. This guarantees **high standards of quality** for design and production.

The ME-FoXX series **complete opto-isolation** of the I/O channels on the "i" models causes a high level of security and reliability as well as low noise and high precision. All analog inputs and outputs as well as all counter lines and 2 of the digital ports are isolated. This allows a complete galvanic separation of PC and application.

If an additional galvanic isolation of the 2 TTL digital I/O ports is required, Meilhaus Electronic offers the ME-63Xtend and ME-UB series which add opto-isolation or relays for these digital channels.

Moreover, the 32 single-ended inputs can also be configured as **16 differential channels**. This mode reduces the number of channels, but noise that influences both differential input lines will be eliminated through the subtraction at the DAQ board's inputs. If you use longer lines between your application and your PC/DAQ board, it is a good idea to use the differential mode.

Ordering Codes:

ME-SlyFoXX ME-4670i PCI
Opto-isolated PCI multi I/O board: 16 bit/500 kHz A/D, 32 single-ended or 16 differential channels, 4x 16 bit analog outputs, 8/8 opto I/O, 2x 8 TTL I/O, 3 counters

ME-SlyFoXX ME-4670
Special models on request

ME-SlyFoXX ME-4670s
ME-SlyFoXX ME-4670is
Special models on request

Accessories:

Cable ME AK-D78/1 **1 m**
Cable ME AK-D78 **2 m**
78-pin D-sub male-female (1:1 wired). Connects ME-FoXX and terminal block, ME-MultiSig or user application

Terminal block ME AB-D78M
78-pin D-sub male and spring terminals

Cable ME AK-D78/4000M-F **1 m**
Cable ME AK-D78/4000M-OE **1 m**
78-pin, 1:1, D-sub male-female or open ends (OE), with special multiple shielding for ME-FoXX series

Cable ME AK-D25F/S
20-pin IDC connector and 25-pin D-sub female for digital I/O ports C/D. 1x included

Cable ME AK-D2578/4000
25-pin D-sub male and 78-pin D-sub female, connects ME-FoXX with 1x ME-63Xtend

Cable ME AK-D2515/4000
25-pin D-sub male and 2x 15-pin D-sub male, connects ME-FoXX with 2x ME-UB

ME-63Xtend and ME-UB series
External expansion boards/boxes with relays or opto-isolation

ME-MultiSig series
Multiplexing, demultiplexing and signal conditioning system

ME-AA4-3 series
Connectivity adaptor, use to connect exisiting ME-2x00i/ME-3000 applications to ME-FoXX series boards or for opto-isolated connectivity of the "i" versions to a ME-MUX32

Web Link: www.meilhaus.com/e_me

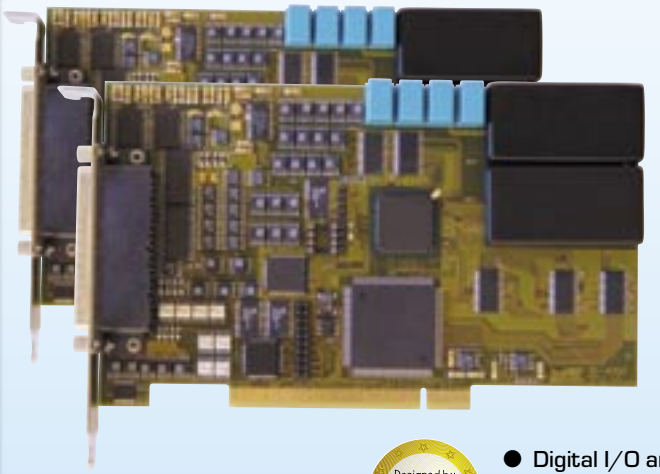
Model:
ME-SylverFoXX/
ME-4680

Platform:
- ☑ PCI
- ☐ PXI/cPCI
- ☐ USB
- ☐ Other

Functions:
- ☑ Analog I/O
- ☑ Digital I/O
- ☐ Temp./°C
- ☐ Interfaces
- ☐ Instrument
- ☐ Logger
- ☐ Isolation
- ☐ Accessory
- ☑ Software

Highend DAQ Board with Special Features

ME-SylverFoXX - Opto-Isolated, 16 bit/500 kHz A/D, Analog-Trigger and More!



ME-SylverFoXX

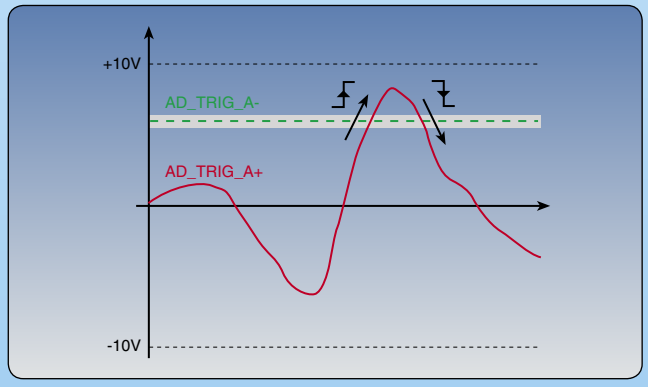
Designed by MEILHAUS ELECTRONIC

Detailed specifications and expandability see page 9

- Versions "i"/"is" with **complete opto-isolation.**
- Analog inputs:
  - 32 single-ended/16 differential Inputs. Models "s": Inputs 1 - 8 also as single-ended channels with **simultaneous sampling**.
  - **16 bit/500 kHz** A/D conversion.
  - Models "i"/"is" **A/D section opto-isolated**.
  - External **analog and digital trigger**.
  - **Timer controlled acquisition** with ME-MUX32. Bundle available, see page 12.
- Analog outputs:
  - 4 output channels. **FIFO for each channel.**
  - **16 bit/500 kHz** D/A conversion.
  - Models "i"/"is" **D/A section opto-isolated**.
  - External digital trigger.
- Digital I/O and counters:
  - **32 digital I/O channels**, grouped in 4x 8 bit ports.
  - Models without "i": TTL inputs/outputs.
  - Models "i"/"is" **8 opto inputs, 8 opto outputs** and 2x 8 TTL inputs/outputs.
  - **Timer controlled bit pattern output with FIFO**.
  - 3x 16 bit **counters**. Models without "i" TTL level, models "i"/"is" **opto-isolated**. All lines wired to D-sub connector.
- PCI Local Bus 2.1 compatible. Plug'n'Play. StandardPCI version.

Software:

ME-Power-CD included:
- Drivers for **Windows** XP, 2000, 98/Me, NT. Visual C++, Delphi, Visual Basic and Borland C/C Builder supported.
- Drivers for **Agilent VEE, LabVIEW.**
- Drivers for **Linux** (source code under GPL).
- Drivers for **Python.**
- Utilities, examples, demos.
- "Soft manuals" in English and German for Acrobat Reader/PDF.



ExATrig Analog Trigger Technology:

In trigger mode an A/D conversion is started only if a rising ("RISING"), falling ("FALLING") or a rising or falling edge ("BOTH") occurs.

The analog A/D trigger makes use of a comparator which compares the positive trigger input (AD_TRIG+, dynamic signale up to 500 kHz, ±10 V) and the negative trigger input (AD_TRIG, threshold). "Rising edge" means that the threshold value is exceeded from negative to positive. "Falling edge" means that AD_TRIG_A+ is falling below the threshold value from positive to negative.

Ordering Codes:

ME-SylverFoXX ME-4680is PCI
Opto-isolated PCI Multi I/O board: 16 bit/500 kHz A/D, channels: 32 se. or 16 diff. or 8 se. with simult. sampling + 24 conventional se., 4x 16 bit analog outputs with FIFO, 8/8 Opto I/O, 2x 8 TTL digital I/O, 3 counters

ME-SylverFoXX ME-4680i PCI
see above, but 32 se. or 16 diff. channels, without simultaneous sampling

ME-SylverFoXX ME-4680 PCI
see above, but without opto-isolation

ME-SylverFoXX ME-4680s PCI
Special model on request

Accessories:

Cable ME AK-D78/1 **1 m**
Cable ME AK-D78 **2 m**
78-pin D-sub male-female (1:1 wired). Connects ME-FoXX and terminal block, ME-MultiSig or user application

Terminal block ME AB-D78M
78-pin D-sub male and spring terminals

Cable ME AK-D78/4000M-F **1 m**
Cable ME AK-D78/4000M-OE **1 m**
78-pin, 1:1, D-sub male-female or open ends (OE), with special multiple shielding for ME-FoXX series

Cable ME AK-D25F/S
20-pin IDC connector and 25-pin D-sub female for digital I/O ports C/D. 1x included

Cable ME AK-D2578/4000
25-pin D-sub male and 78-pin D-sub female, connects ME-FoXX with 1x ME-63Xtend

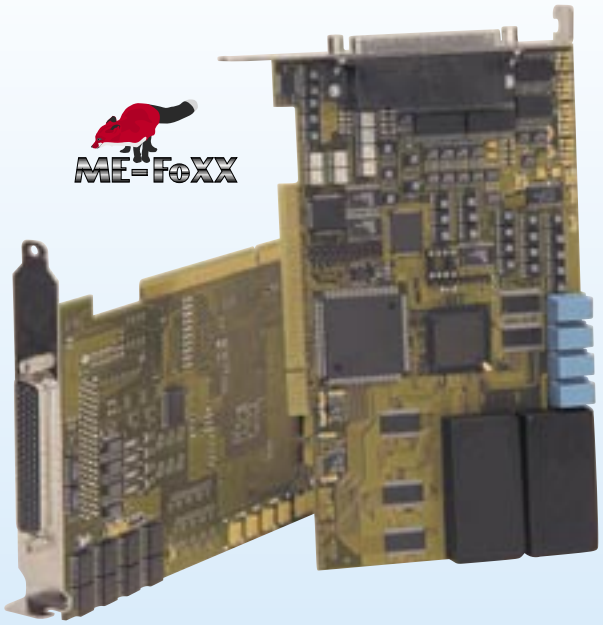
Cable ME AK-D2515/4000
25-pin D-sub male and 2x 15-pin D-sub male, connects ME-FoXX with 2x ME-UB

ME-63Xtend and ME-UB series
External expansion boards/boxes with relays or opto-isolation

ME-MultiSig series
Multiplexing, demultiplexing and signal conditioning system

ME-AA4-3 series
Connectivity adaptor, use to connect exisiting ME-2x00i/ME-3000 applications to ME-FoXX series boards or for opto-isolated connectivity of the "i" versions to a ME-MUX32

Web Link: www.meilhaus.com/e_me



4 Families of DAQ Boards - From Low-Cost to High-End

The Perfect Solution for Your Application

The ME-FoXX (ME-46xx) family includes DAQ boards from low-cost to high-end. All models have a **16 bit/500 kHz A/D section** and **4x 8 bit digital ports**. You can individually select many more features from a wide variety of models:

- Additional **16 bit/500 kHz analog output section**.
- More analog inputs (up to 32).
- Single-ended or differential analog inputs for **reliable, low noise operation** in noisy environments.
- Analog inputs with **simultaneous sampling.**
- Additional 16 bit counters.
- **Opto-isolation** of A/D, D/A section, trigger lines, counter lines and 2 digital I/O ports for operation in noisy industrial environments.
- **Analog trigger** for A/D conversion.
- **FIFOs** for the analog output channels, eg. for use as virtual **wave-form generator** or (together with the digital channels) as timer controlled **bit pattern generator**.
- **Board will grow with your application:** Expand ME-FoXX series with multiplexed analog inputs, relays and more.

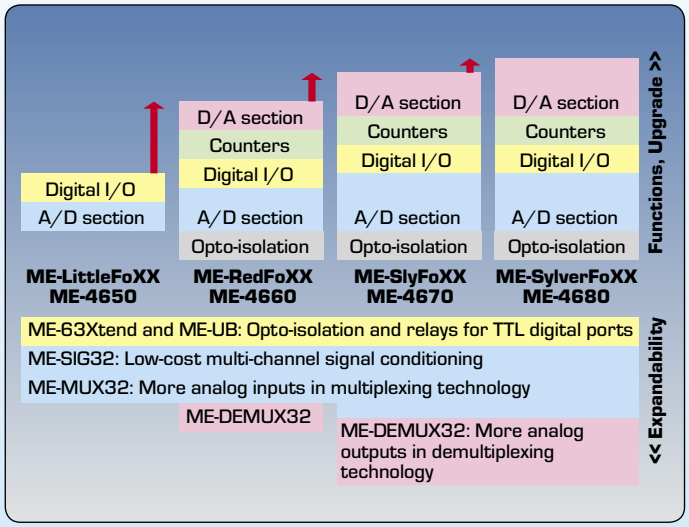
ME-LittleFoXX ME-RedFoXX ME-SlyFoXX ME-SylverFoXX

Specifications:

Analog Inputs	**ME-LittleFoXX ME-4650**	**ME-RedFoXX ME-4660**	**ME-SlyFoXX ME-4670**	**ME-SylverFoXX ME-4680**
Number	16 single-ended	16 single-ended	32 single-ended or 16 differential	
		Models "s": 8 of the channels also as single-ended lines with simultaneous sampling (with Sample&Hold), other channels: Conventional single-ended channels		
Ranges	±10 V, ±2.5 V, 0...10 V, 0...2.5 V			
FIFOs	1 k FIFO (1024 values) for conversion with channel list			
Isolation	-	Models "i": Up to 500 V (specification ot the opto-coupler chips)		
A/D conversion	16 bit/500 kHz			
External trigger digital	External digital trigger (on rising, falling, both edges); TTL or on models "i" with opto-isolation			
analog	-	-	Ext. analog trigger (on rising, falling, both edges)	
Analog Outputs	**ME-4650**	**ME-4660**	**ME-4670**	**ME-4680**
Number	-	2 channels	4 channels	
Ranges	-	±10 V		
Isolation	-	Models "i": Up to 500 V (specification ot the opto-coupler chips)		
D/A conversion	-	16 bit/500 kHz		
FIFOs	-	-	-	4 k per channel
Trigger	-	External digital trigger (rising, falling edge)		
Digital I/O	**ME-4650**	**ME-4660**	**ME-4670**	**ME-4680**
Number	Models without "i" 4x 8 bit TTL I/O ports, each port programmable as input/output; 2 ports on D-sub, 2 ports on IDC			
	-	Modells "i": 8 opto inputs, 8 opto outputs on D-sub and 2x 8 bit TTL I/O ports, each port programmable as input/output, on IDC (on board)		
Level	Models without "i": Standard TTL level			
	-	Models "i" opto-isolated ports: Default 5 V level, optional up to 48 V. Outputs open-collector		
Extras	-	-	-	Timer controlled bit pattern generation with FIFO (uses D/A FIFO 3)
Counter	**ME-4650**	**ME-4660**	**ME-4670**	**ME-4680**
Number	-	3 independent 16 bit, compatible with 8254		
Level	-	Models without "i": TTL. Models "i" opto-isolated: Default 5 V level, optional up to 48 V. Outputs open-collector		
Lines	-	All lines (clock, gate, out) of all counters wired to D-sub connector		
General Data				
Bus interface	32 bit/33 MHz PCI Local Bus 2.1 compatible			
Settings	Via software; Windows Plug'n'Play			
Size (mm)	175 x 107 (without slot bracket/connectors)			
Connectors	78-pin D-sub female, pin field on board (2x 8 bit TTL digital I/O ports C/D). a flat ribbon cable with a 25-pin D-sub female and slot bracket is included; uses a second PC slot			
Expandability (also see "Accessories" section)				
Analog inputs	More channels in multiplexing technology with ME-MUX32. Signal conditioning with ME-MUX32 or ME-SIG32			
Analog outputs	More channels in demultiplexing technology with ME-DEMUX32			
Digital I/O ports C/D	Relays or opto-isolation with ME-63Xtend or ME-UB series			

The DAQ Board That Will Grow With Your System!

ME-FoXX Series - Fair Price, Reliable, Compatible and Expandable



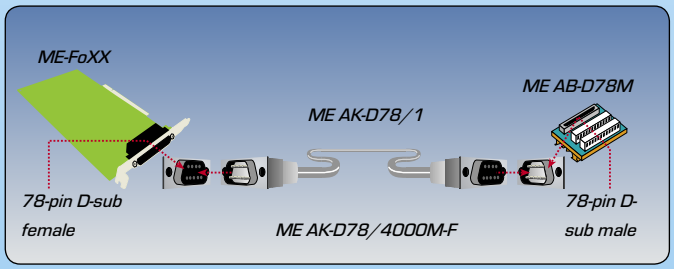
The ME-FoXX series boards can grow with your system into "two directions":

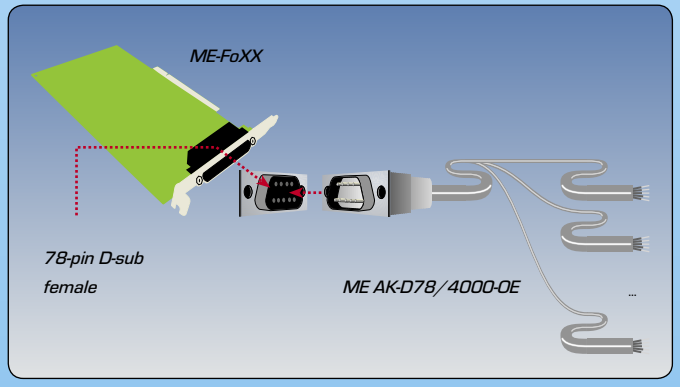
- **...by exchanging/upgrading the board:**
  All models of the family are **fully compatible with each other in connectivity and software**.
  Your application requires more functions? For exmaple: Opto-isolation of all lines, channels with simultaneous sampling, analog output FIFOs? Just exchange the board you have been using until now with a higher model!
  - You won't have to change the **connectivity**.
    You won't have to change the **software**. You will only have to integrate the new functions you have added by choosing a higher board.

- **...by adding expansion accessories:**
  The ME-FoXX series PCI boards are integrated into a **sophisticated system of reliable and flexible channel expansion solutions.**

You need more analog inputs, more analog outputs, a modular, flexible and lowcost solution for multi-channel signal conditioning?
You would like to add relays or opto-isolation for the ME-FoXX serie's TTL ports?
We present you **a variety of expansion solutions**:

Application	Accessories Required	For ME-FoXX Models
Simple connectivity with D-sub and/or spring terminals	Cable ME AK-D78/1 Terminal block ME AB-D78M	All models
Very low noise connectivity with D-sub	ME AK-D78/4000M-F with special shielding	All models
Very low noise connectivity, open ends	ME AK-D78/4000-OE with special shielding	All models
Relays/opto-isolation for TTL digital ports C/D **- DIN rail mountable**	ME-63Xtend series	All models
Relays/opto-isolation for TTL digital ports C/D **- desktop boxes**	ME-UB series	All models
Multiple analog inputs in multiplexing technology; ME-SylverFoXX/ME-4680 also with timer controlled acquisition!	ME-MultiSig: ME-MUX32M and S	All models in various levels of configuration
Low-cost multi-channel signal conditioning	ME-MultiSig: ME-SIG32	All models
Many analog outputs in demultiplexing technology	ME-MultiSig: ME-DEMUX32	ME-RedFoXX/ME-4660, ME-SlyFoXX/ME-4670, ME-SylverFoXX/ME-4680



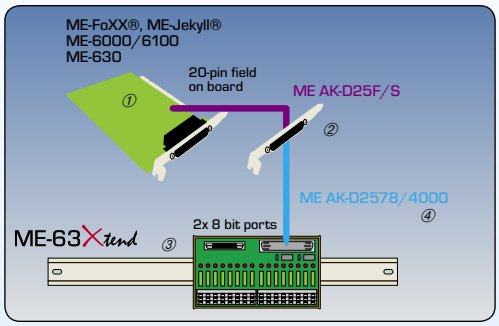


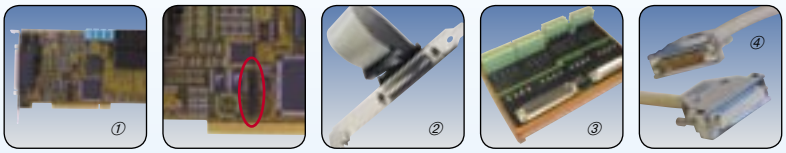
Also available as low-cost bundle! See page 35

More detailed information on ME-63Xtend, ME-UB and ME-MultiSig see chapter 3. "Accessories & Software"!

Expand 16 TTL Digital I/O Channels (Port C/D) with Relays or Opto-Isolation: DIN Rail Mountable

ME-63Xtend Series for DIN Rails

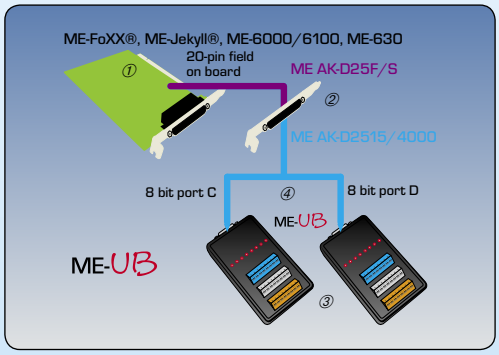


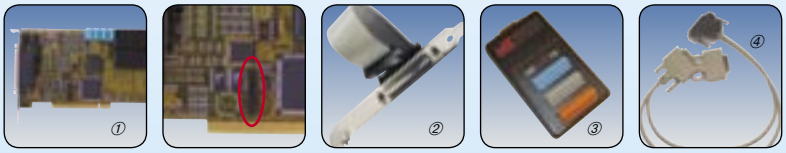


- ME-631: 16 relays type C.
- ME-632: 16 opto digital inputs.
- ME-633: 16 opto digital outputs.
- ME-634: 8/8 opto digital I/O.
- ME-635: 16 solid state relays.
- Cable ME AK-D2578/4000: 25-pin D-sub male and 78-pin D-sub female.

Expand 16 TTL Digital I/O Channels (Port C/D) with Relays or Opto-Isolation: Desktop Boxes

ME-UB Series Mini Desktop Boxes

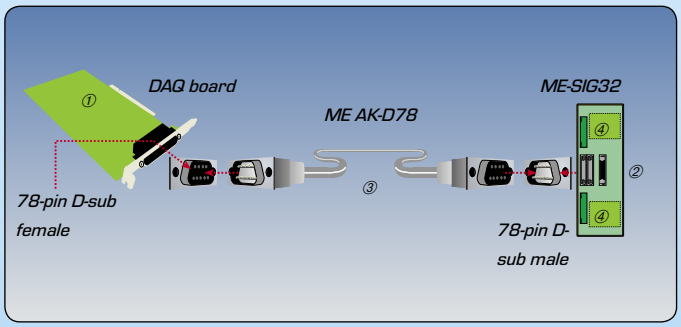


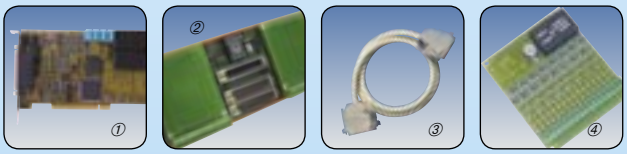


- ME-UBOI: 8 opto digital inputs
- ME-UBOO: 8 opto digital outputs.
- ME-UBRE: 8 relays, change over.
- Cable ME AK-D2515/4000: 25-pin D-sub male, 2x 15-pin D-sub male.
- MW17-GS/6: 12 V/500 mA power adaptor for ME-UB series.

Low-Cost Multi-Channel Signal Conditioning

ME-SIG32 for 32 Channels Signal Conditioning

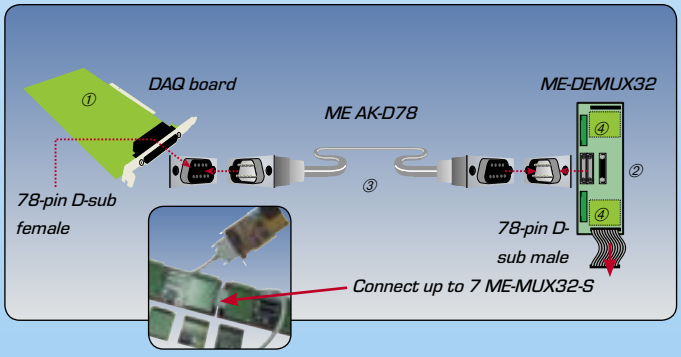


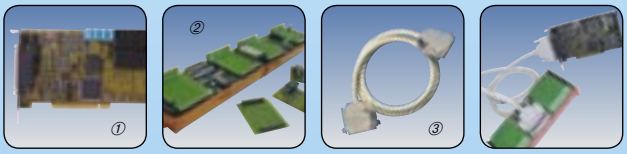


- ME-SIG32: 32 channels signal conditioning.
- Cable ME AK-D78: 78-pin D-sub male-female.
- Plug-on modules for **signal conditioning** ④. One module is for 16 channels. Available for RTDs, thermocouples etc.

More Analog Inputs in Multiplexing Technology

ME-MUX32-M and -S for 32-to-1 Multiplexing

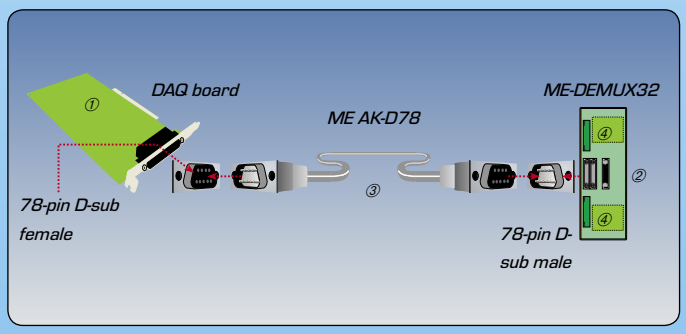


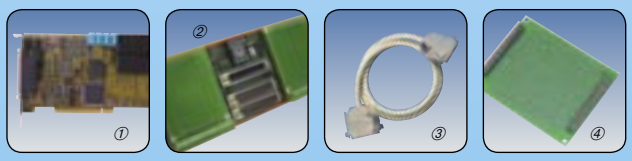


- ME-MUX32M: 32-to-1 multiplexing and signal conditioning.
- Cable ME AK-D78: 78-pin D-sub male-female.
- Plug-on modules for **signal conditioning** ④. One module is for 16 channels. Available for RTDs, thermocouples etc.
- ME-MUX32S: Slave module for even more channels.

More Analog Outputs in Demultiplexing Technology

ME-DEMUX32 for 1-to-32 Demultiplexing

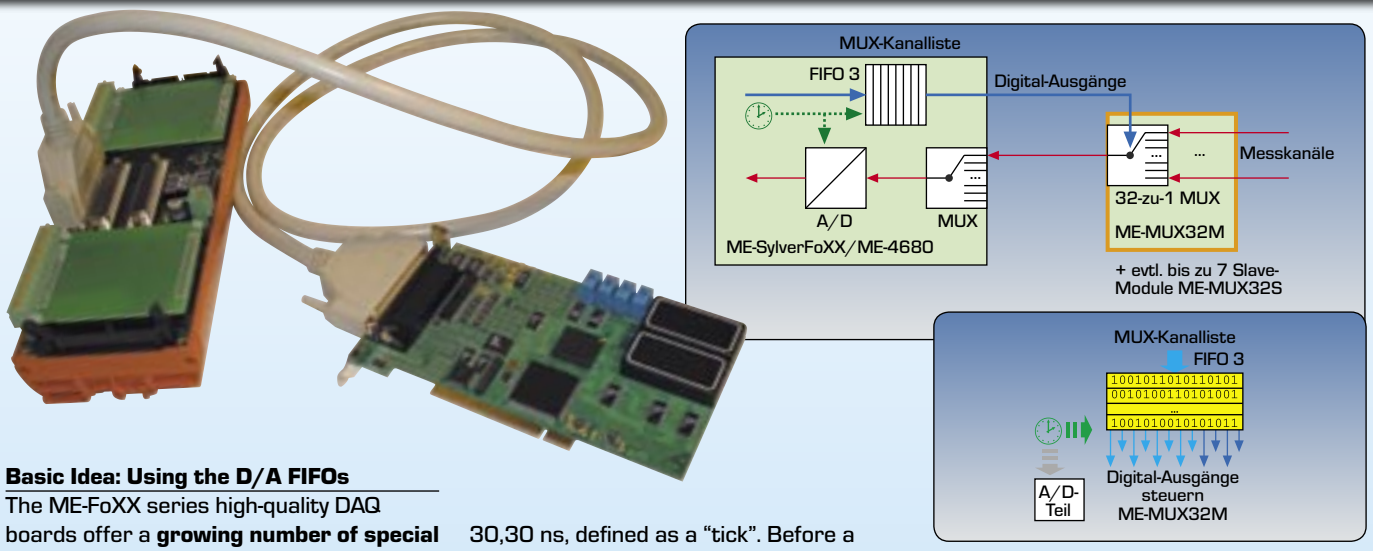




- ME-DEMUX32: 1-to-32 demultiplexing & signal conditioning.
- Cable ME AK-D78: 78-pin D-sub male-female.
- Plug-on modules for **signal conditioning** ④. One module is for 16 channels. Prototyping module for user circuitries.

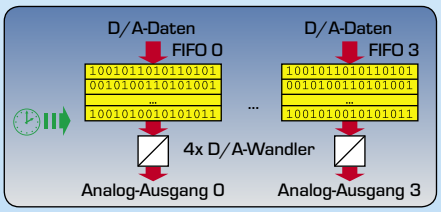
Inside ME Series: ME-SylverFoXX/ME-4680

Bit Pattern Output and Timer Controlled Multi-Channel DAQ System



Basic Idea: Using the D/A FIFOs

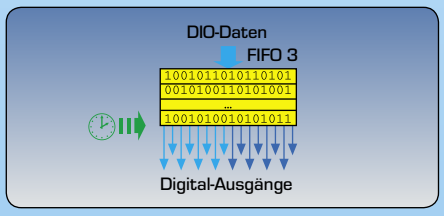
The ME-FoXX series high-quality DAQ boards offer a **growing number of special features** from lowcost up to the highend models. The top model ME-SylverFoXX (ME-4680) for example has four additional **4 k FIFOs** on the 4 analog outputs. They are used for the analog output modes



"Continuous" (timer-controlled) and "WrapAround" (periodic, timer-controlled), for example as a waveform generator. For additional detailed information, see the user manual "ME-FoXX/ME-46xx series".

Bit Pattern Output

One of the ME-SylverFoXX FIFOs (3) can be used in a way in which it wasn't originally intended to be used: it can control the digital channels. This allows **bit pattern output under timer-control** on any two of the four 8 bit wide digital ports. Please



note for the models "i" with opto-isolation: One opto port (port B) is always configured as input and can not be used for bit pattern output!

Divided into low byte and high byte, the 16 bit wide FIFO values (= bit pattern) can be assigned to two of the 8 bit digital ports. A programmable 32 bit counter with a 33 MHz clock is used as a time-base. The result is a minimum period of 30,30 ns, defined as a "tick". Before a bit pattern output can start, you have to make up your mind about whether you want output values to be loaded **continuously** during the output operation (BitPattern Continuous), or whether the same values will be used for **periodic output** (BitPattern WrapAround).

Programming the timer-controlled bit pattern output requires 3 steps. Ready-to-use **functions are included in the driver software** that comes on the CD-ROM with the boards:

1. **Configuration of the hardware** with driver functions ...DIOBPPortConfig and ...DIOBPConfig
2. **Preparing the software** with the driver functions ...DIOBPContinuous or ...DIOBPWraparound
3. **Starting the bit pattern output** with the driver function ...DIOBPStart

After configuring the hardware and software, the bit pattern output can be started. The following **trigger modes** are available:

- **Software start:** Output will be started after the function ...DIOBPStart was called.
- Start with **external trigger impulse** (rising, falling or any edge) at the input DA_TRIG_3 (Pin 65).

In "BitPattern-Continuous" mode an output operation will normally be stopped when no more values are reloaded. In "BitPattern-Wraparound" mode you can stop the output operation with a determined bit pattern, i. e. the last value in the buffer. The function ...DIOBPStop can be used in both modes; it will stop the output operation at once. Then the bit pattern "0000Hex" will be output.

MUX Timer-Controlled

When the 32-to-1 analog multiplexer ME-MUX32 is used together with a ME-4680, 12 digital output lines of the DAQ board (2 ports) are used to control the multiplexer (channel selection etc.). For timer-controlled data acquisition with the ME-MUX32, one of the ME-SylverFoXX FIFOs (FIFO 3) is used to control the digital channels, just as described above with bit pattern output. In this case, the FIFO is controlled by the A/D sectionand includes the channel list that switches the digital output lines for **timer-controlled multiplexing**.

Timer-controlled data acquisition with the ME-MUX32 can be integrated into user applications very easily, **using the driver functions**. There is, for example, a function for the hardware configuration for timer-controlled acquisition. This software function configures the counters, hands over the MUX channel list, selects the acquisition mode and the external trigger source and trigger edge.

A 32 bit wide CHAN timer is available for this operation. The CHAN timer determins the sampling rate within the MUX channel list. The maximum CHAN time is about 130 s, the minimum CHAN time is 2 µs for TTL versions. The time base is a 33 MHz clock. The result is a minimum period of 30,30 ns, defined as a "tick".

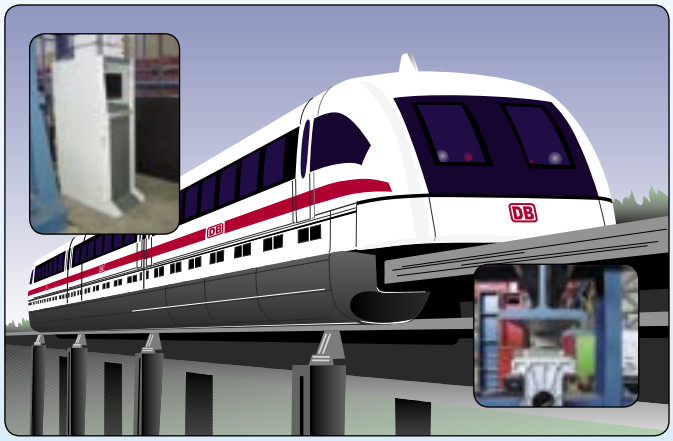
The following steps are required for the programming:

1. **Enabling the MUX mode** with the driver function ...MultiSigAIOpen.
2. Creating a **user-defined MUX channel list** to control the MUX channels (0...255).
3. **Configuring the A/D section** of the ME-4680 with driver function ...MultiSigAIConfig.

Continued on page 13, bottom! >>

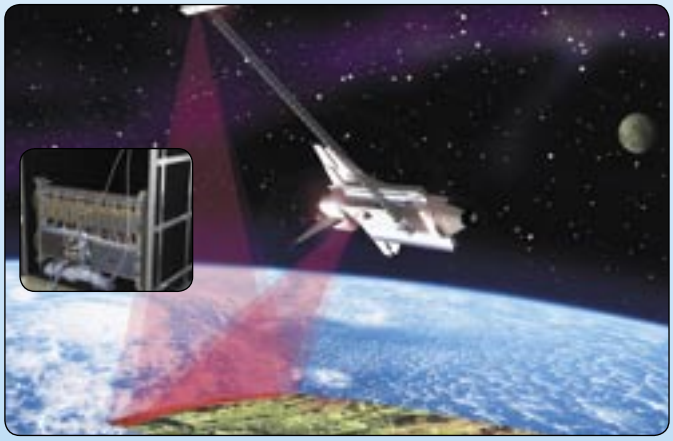
Applications with the ME Class

ME DAQ & Control Boards are Used in these Applications...



ME boards simulating the Transrapid support magnet control

ME boards for testing solar modules



ME boards in a test system for a X band SAR demonstrator

ME boards testing aerospace components

ME boards controling the automatic distribution system in cement production at Schwenk Zement KG

ME boards in a combine harvester - plot harvesting in plant breeding stations

4. **Preparing the software** with driver function ...MultiSigAIContinuous and/or ...MultiSigAIScan.
5. **Starting the acquisition** with driver function ...MultiSigAIStart.
6. **Disbale the MUX mode** with driver function ...MultiSigAIClose.

Before starting the data acquisition you have to make up your mind about whether a known number of values has to be sampled ("MultiSig-AIScan") or whether values have to be sampled continuously ("Multi-Sig-AIContinuous"), until the user stops the acquisition. After configuring the hardware and software, the acquisition can be started via software or an external trigger signal. A detailed description of the proceeding and the driver functions can be found in the user manual "ME-FoXX/ ME-46xx series"